

1 **ABSTRACT**

2 An area of a substrate is imaged with and without
3 heating, to obtain a hot image and a cold image
4 respectively. The hot and cold images are compared with
5 one another to identify one or more locations as being
6 defective, e.g. if the result of comparison at one location
7 differs significantly relative to other locations. The
8 comparison results in all locations form a differential image,
9 and in several embodiments a number of differential images
10 are obtained by repeatedly heating, imaging and comparing.
11 In such embodiments, multiple differential images are
12 averaged at each location, to improve the signal to noise
13 ratio. Pump and probe lasers may be used for heating and
14 for illumination respectively, or alternatively a single laser
15 may be employed to generate both pump and probe beams.